A management information system for nurse/midwives

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The experiences of nurse/midwives with a simple management information system in the private sector are reported from four facilities in Nigeria. When such a system is being introduced, special attention should be given to strengthening the ability of health workers to record and collate data satisfactorily.

Voir page 188 le résumé en français. En la página 188 figura un resumen en español.

In developing countries there is often a paucity of reliable information on health care, and providers may find it difficult to deal with whatever data are available. The experiences of independent nurse/midwives serving low-income urban populations in Nigeria's Osun State illustrate what can be achieved with a management information system in which the analysis and interpretation of data are made as simple as possible.

Determinants and characteristics

Preliminary investigations in health care facilities A, B, C and D (see table) during August 1995 revealed that no proper health information system existed. There were major deficiencies in record-keeping, data collation and related matters. The staff of 45 health facilities managed by nurse/midwives agreed to collaborate in a project involving the introduction and use of a management information system, while administrative, accounting and financial control systems were also being brought into play. The aim was to improve operational efficiency so that the prices of services could be reduced, demand could be boosted, and, ultimately, revenues increased.

The systems were installed in January 1996. The management information system was primarily designed to strengthen operational management, although it was also intended to provide reliable epidemiological information that would complement data obtained in the public sector. The design was influenced by:

– the preventive and curative services provided in the facilities, including inpatient care;
– the educational level of the personnel and their ability to perform numerical tasks;
– the cost of installation and maintenance;
– the need to integrate with the National Health Management Information System being developed by the Federal Ministry of Health and Social Services.

The preferred formats for a simplified system shared many properties with those adopted in public sector primary care facilities. However, variations were required which favoured the use of data for purposes other than epidemiological surveillance and research. A manual rather than an electronic system was desired because of low computer literacy, an unreliable power supply, and the high cost of acquiring and maintaining computers. The system that emerged is described below.

- Visits of clients to the facilities were recorded in attendance registers according to the type of service requested: general outpatient consultations, inpatient care, maternity care, family planning, and child welfare, including immunization. The information placed in the registers included patients' personal details, working diagnoses, and outcomes of care. Case notes and folders on individuals and families were designed for ease of storage and retrieval of clinical information.
- The information in attendance registers was collated on special forms at health facility level and copies were sent to the National Private Nurses and Midwives Association for further collation. Up-to-date statistics were thus provided on all the facilities attached to this nongovernmental organization.
- Monthly average figures for patients' visits were transferred to quarterly summary forms, together with revenue and expenditure data generated from the financial control system. In this way a simple tool was provided for monitoring performance. These forms helped to strengthen day-to-day management of facilities and provided a basis for strategic decision-making. Because they contained financial information they were intended only for internal use.

Outputs

Compliance with recommended procedures was assessed by conducting staff interviews in February 1997, and output data for 1996 were analysed. Utilization varied markedly between the four facilities even though they offered similar services, covered the same socioeconomic group, were equally acces-

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sible and charged similar fees (see table). All the facilities experienced a steady decline in patient throughput, perhaps reflecting a decline in household incomes. Approximately a quarter of outpatients and inpatients were aged up to 4 years, and about 60% were in the age range of 15–59 years. Factors such as perceived technical competence, the availability of credit and the physical state of the facilities were probably more influential than gender in determining patients' choice of providers: there was no evidence, for example, of female patients demanding to be seen by female providers.

The conditions most commonly associated with admission were malaria and gastrointestinal, respiratory, obstetric and gynaecological disorders, accounting for 83% of persons admitted and 66% of bed-days. Of the persons admitted for reasons unrelated to maternity, 63% were females. The highest bed occupancy rate was only 33% (see table).

Maternity care visits amounted to 35% of total throughput, most of them being follow-up visits to antenatal clinics. Only one of the facilities employed a full-time registered midwife, reflecting the general shortage of trained maternity personnel. In Nigeria, deliveries are mostly handled by community health extension workers, whose technical skills are seldom updated. Attendance at postnatal clinics was generally very poor, possibly because the importance of postnatal check-ups was not made clear to women attending antenatal clinics or at delivery. However, some postnatal check-ups were not recorded as such because they coincided with the administration of diphtheria/pertussis/tetanus vaccine and were noted as child welfare clinic visits.

Selected indicators of utilization in four health facilities, Osun State, Nigeria, 1996

	Health facility			
	A	B	C	D
General outpatient consultations				
Mean monthly visits	65	84	27	101
As % of total clinic visits[a]	70	26	70	49
Admissions				
Monthly means	2	9	2	12
As % of outpatient visits	3	10	8	12
Mean length of stay (days)	3	7	11	4
Bed occupancy rate (%)	3	33	14	21
Maternal and child health				
Mean monthly visits to antenatal clinic	11	137	10	59
Maternity care visits as % of total clinic visits	15	50	30	34
Postnatal clinic visits as % of total births	3	0	30	33
Mean monthly child welfare clinic visits[b]	8	71	0	8

[a] Total visits = outpatient + antenatal + postnatal + child welfare visits + deliveries.

[b] Mainly for immunization.

Obstacles

The adoption of a systematic approach to information storage, retrieval and analysis added a new dimension to the work of the nurse/midwives, who tended to regard such an innovation as unnecessary and, indeed, to resist it. This proved to be the greatest difficulty encountered.

It transpired that the period of three months allowed for installing the system and familiarizing users with it was not long enough. The simultaneous setting up of accounting and financial control systems created considerable confusion. Falling throughput of patients appeared to dampen enthusiasm for management reforms. On the whole, the data generated did not seem to have a significant influence on decision-making in the facilities.

Some aspects of the management information system contained errors of design which became apparent as implementation progressed. For instance, the child welfare clinic register made provision for records of height, which was rarely measured in clinics and hospitals because height-for-age and height-for-weight charts were generally unavailable. This register had to be amended to suit local conditions and operational needs.

Benefits

The following benefits were derived from the management information system.

- Reliable information became available on the pattern of demand for services, as deduced from changes in throughput. The data allowed future revenues to be estimated with increased reliability and enabled facility heads to make adjustments for periodic fluctuations in demand.
- The ability to plan expenditure was improved.
- Excessive investment was avoided in technologies and services for which potential demand was low.
- Data were used to refute allegations of malpractice and high mortality in one of the facilities.

Major gains were made in the generation of information relevant to clinic management, and insights were provided into the pattern of demand for private health care. The ultimate yield will depend on the use to which the information is put.

Along with reliable financial statistics, utilization data offer a potent instrument for planning low-cost community health insurance schemes. In the present instance, unfortunately, the simultaneous installation of a range of systems overloaded the technical and administrative capacities of the facilities, whose heads encountered difficulty in calculating and interpreting the bed occupancy rate and other indicators. Particularly in developing countries, management information systems for private providers of basic health services should be as simple as possible in order to facilitate the realization of such non-clinical tasks. It is also desirable that they should require minimal additional cash outlays in view of the limited financial resources of the providers.

When a management information system is being introduced, special attention should be given to strengthening the ability of health workers to document information accurately and to collate it in simple formats. A prolonged effort may be needed before it becomes possible to achieve advanced data analysis and its application to decision-making. ■

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Résumé

Système d'information gestionnaire à l'intention des infirmières/sages-femmes

Dans les communautés urbaines à faible revenu de l'Etat d'Osun, au Nigéria, les dispensateurs de services de santé de base ont constaté une nette diminution du nombre de patients ces dernières années. Quatre établissements de santé ont été retenus pour mettre en oeuvre la phase pilote d'un projet d'aide à la gestion à long terme reposant sur l'installation de systèmes d'information gestionnaire et de contrôle financier. Les systèmes ont pour but d'accroître l'efficacité, ce qui, en abaissant les frais de fonctionnement, devrait permettre d'augmenter le taux d'utilisation et les recettes.

Les réformes de la gestion clinique ont considérablement amélioré la qualité des informations sur l'utilisation des services et celle des informations financières dont disposaient les dispensateurs et donc, dans une certaine mesure, les décisions en matière d'affectation des ressources. On a ainsi pu obtenir des données fiables sur les coûts qui ont pu être utilisées comme point de départ pour établir les prix des services. Toutefois, l'adoption d'une méthode systématique de stockage, de recherche et d'analyse de l'information a ajouté une nouvelle dimension aux tâches que le personnel des établissements de santé (et leurs propriétaires) avait pourtant l'impression d'exécuter de façon satisfaisante. Il semble par ailleurs que la baisse du nombre de patients ait freiné l'enthousiasme suscité par ces réformes, car aucune amélioration appréciable des recettes n'est apparue au cours de l'année, et cela en raison principalement de l'aggravation de la crise économique dans le pays.

Les systèmes d'information gestionnaire destinés aux dispensateurs de services de santé de base dans les pays en développement doivent être aussi simples que possible et doivent tenir compte du fait que les agents de santé travaillant à ce niveau n'aiment pas beaucoup les chiffres et ne sont guère enthousiasmés par les tâches non cliniques. Les systèmes impliquant un minimum de sorties d'argent supplémentaires ont davantage de chances d'être adoptés durablement, compte tenu des faibles marges de bénéfices de beaucoup de prestataires. Les systèmes recommandés devraient être mis en place progressivement en privilégiant dans un premier temps le renforcement de l'aptitude des agents de santé à réunir les informations avec précision et à les assembler sous une forme simple. L'analyse plus perfectionnée des données et son application à la prise de décision exigeront sans doute beaucoup de temps et d'efforts.

Resumen

Un sistema de información para la gestión destinado a enfermeras/parteras

En los últimos años se ha observado una marcada disminución del número de pacientes atendidos por los dispensadores de servicios de salud básicos de las comunidades urbanas de bajos ingresos del Estado de Osun, en Nigeria. Se seleccionaron cuatro establecimientos de salud para la fase piloto de un proyecto de ayuda a la sostenibilidad centrado en la implantación de sistemas de información para la gestión y de control financiero. Los sistemas se diseñaron al objeto de mejorar la eficiencia, para que la consiguiente disminución de los gastos de funcionamiento y de los precios diese lugar a un aumento de la utilización de los servicios y de los ingresos.

Las reformas introducidas en la gestión clínica mejoraron considerablemente la calidad de la utilización y la información financiera a disposición de los dispensadores de asistencia, y en cierta medida mejoraron también las decisiones de asignación de recursos. Además proporcionaron datos fiables sobre los costos, que pudieron emplearse para fijar el precio de los servicios. Sin embargo, la aplicación de un enfoque sistemático al almacenamiento, recuperación y análisis de la información añadió una nueva dimensión a tareas que a juicio del personal sanitario (y de los propietarios) se desempeñaban ya bastante bien. Paradójicamente, la disminución del número de pacientes parecía atenuar el interés por este tipo de reformas, pues no se apreció una mejora sensible de los ingresos a lo largo del año, a causa sobre todo del agravamiento de la crisis económica sufrida por el país.

Los sistemas de información para la gestión destinados a dispensadores de atención sanitaria básica de los países en desarrollo deberían ser lo más simples posible, teniendo en cuenta que con frecuencia los agentes de salud que trabajan a ese nivel tienen escasa habilidad para los cálculos numéricos y poco interés por las tareas no estrictamente clínicas. Los sistemas que requieren poco desembolso adicional

tienen más probabilidades de ser adoptados y mantenidos, habida cuenta del escaso margen de beneficio con que trabajan muchos de esos dispensadores. Los sistemas prescritos deberían escalonarse, insistiendo inicialmente en fortalecer la capacidad de los agentes de salud para documentar la información con precisión y cotejarla empleando formatos simples. La implantación de sistemas avanzados de análisis de datos y su aplicación a la adopción de decisiones puede requerir bastante tiempo y ayuda.